

Triangle T Ranch Cookhouse (PWS 3230076) SOURCE WATER ASSESSMENT REPORT

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State of Idaho Department of Environmental Quality

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Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality (DEQ) is completing the assessments for all Idaho public drinking water systems. The assessment for the Triangle T Ranch Cook drinking water source is based on a land use inventory within a 1,000 foot radius of the well source, sensitivity factors associated with the source, and characteristics associated with either your aquifer or watershed in which you live.

This report, Source Water Assessment for Triangle T Ranch Cook (PWS # 3230076) describes the public drinking water system, the associated potential contaminant sources located within a 1,000 foot boundary around the drinking water source, and the susceptibility that may be associated with any associated potential contaminants. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the Triangle T Ranch Cook water system.**

The Triangle T Ranch Cookhouse is located approximately six miles west of Horseshoe Bend in Gem County (see Figure 1). The non-community transient water system has one well that serves approximately 75 people through two connections. Water quality tests conducted for the well during 2003 do not show elevated levels of chemicals. Nitrate was detected in the groundwater; however, the highest nitrate concentration was 0.335 mg/L, which is below the maximum contaminant level (MCL) of 10 mg/L.

The final susceptibility ranking for the well is moderate for IOC, VOC, SOC, and microbial contaminants (see Table 2). A copy of the susceptibility analysis for the Triangle T Ranch Cookhouse well along with a map showing potential contaminant sources are included with this summary. Information regarding the potential contaminants within the 1,000-foot boundary have been summarized and included in Table 1.

The potential contaminant sources identified within the delineated area include a landfill, Highway 52, and two septic systems (see Table 1 and Figure 2). The landfill was a non-municipal site, and is now closed. Potential contaminants from the landfill include inorganic chemical (IOC) constituents (e.g. nitrate), volatile organic chemical (VOC) constituents (e.g. petroleum products), synthetic organic chemical (SOC) constituents (e.g. pesticides), and microbial contaminants (e.g. bacteria). If an accidental spill occurred on the road IOC, VOC, SOC, and microbial constituents could contaminate the ground water. Two septic systems are located within 200 feet of the well head. Septic systems can be the source of IOC and microbial contaminants to the ground water.

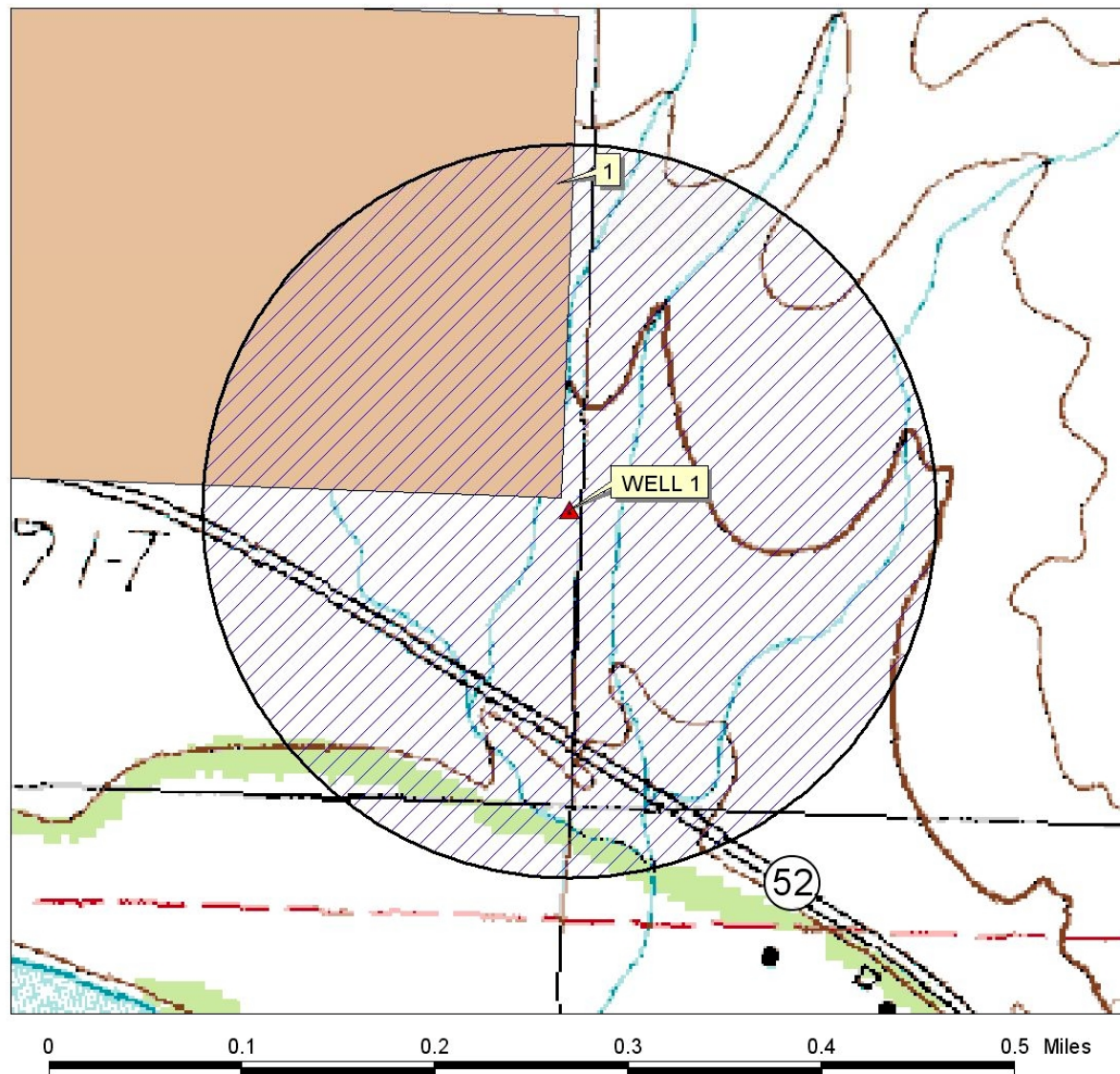
Table 1. Triangle T Ranch Cookhouse Potential Contaminant Inventory



Map ID	Source Description	Source of Information	Potential Contaminants ¹
1	Landfill	Database Search	IOC, VOC, SOC, M
	Highway 52	GIS Map	IOC, VOC, SOC, M
	Septic System	GWUDI Field Survey	IOC, M

¹IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical, M= microbial

The susceptibility of the drinking water source to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity or system construction, the land use characteristics, and potentially significant contaminant sources. Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in another category(ies) results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic chemical (IOC, e.g. nitrates, arsenic) contaminants, volatile organic chemical (VOC, e.g. petroleum products) contaminants, synthetic organic chemical (SOC, e.g. pesticides) contaminants, and microbial contaminants (e.g. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each drinking water source is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement.

Figure 2. Triangle T Ranch Cookhouse Delineation Map and Potential Contaminant Source Locations





PWS# 3230076
Well 1

The well's system construction was rated moderate. The well was drilled in March of 1996 to a depth of 203 feet bgs. The static water level at the time of drilling was 30 feet bgs. The well has a 10-inch diameter casing from the surface to 50 feet bgs, and a 6-inch diameter casing from 50 feet to 203 feet bgs. The casing is perforated from 153 to 203 feet bgs and extends into non water-bearing rock. The well casing thickness is 0.250 inches. The required casing thickness is 0.280 inches for a well casing that is six inches in diameter (IDWR, 1993). The well's bentonite annular seal extends from 4 feet to 50 feet bgs into non water-bearing granite and sand. According to the 2003 sanitary survey, the sanitary seal is loose. With respect to flooding vulnerability, the well is located outside a 100-year floodplain and the casing is set above grade the regulated distance.

The hydrologic sensitivity was rated high for the well. This rating is based upon moderate-to-well drained soil characteristics defined by the Natural Resource Conservation Service. The well is also considered sensitive due to sand and an unknown “pit run” lithology noted on the well log within the vadose zone (zone from land surface to the water table). There is a clay layer present in the subsurface to provide a low-permeability barrier between possible surface contaminants and the water-producing zone; however, it is only 38 feet thick, less than the required 50 feet cumulative thickness identified in the SWA Plan (DEQ, 1999). In addition, the depth to first ground water identified during drilling was from 178 to 180 feet below ground surface (bgs) into black gravel.

The Triangle T Ranch Cookhouse rated low (Table 2) for potential contaminant sources and land use for VOCs (e.g., petroleum products), IOC's (e.g., nitrates) and SOC's (e.g., pesticides) microbial contamination (e.g., total coliform). The landfill, septic systems, and the presence of Highway 93 within the delineated source water assessment area contributed to the low rankings.

The final susceptibility ranking for the well is moderate for IOC, VOC, SOC, and microbial contaminants (see Table 2). A copy of the susceptibility analysis for the Triangle T Ranch Cookhouse well along with a map showing potential contaminant sources are included with this summary. Information regarding the potential contaminants within the 1,000-foot boundary have been summarized and included in Table 1.

Table 2. Summary of the Triangle T Ranch Cookhouse Susceptibility Evaluation

	Susceptibility Scores ¹									
	Hydrologic Sensitivity	Contaminant Inventory ²				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbial		IOC	VOC	SOC	Microbial
Well 1	H	L	L	L	L	M	M	M	M	M

¹H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility

²IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few

potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the Triangle T Ranch Cookhouse water system, drinking water protection activities should focus on evaluating possible sources of contamination such as those identified in this assessment, and other sources including animal grazing and wildlife near the drinking water source. To protect the source water, the water system operator could build infrastructure to restrict access to the well head and repair the loose sanitary seal. Working with the local soil and conservation district and Gem County will better inform the water system of chemicals that may be applied or stored near the drinking water well. The water system is also encouraged to develop a drinking water protection plan to document and rank potential contaminant sources, assess protection efforts, and provide education for staff and the public about the drinking water. Drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. For assistance in developing protection strategies please contact Pamela Smolczynski in the Idaho Department of Environmental Quality Boise Regional Office at (208) 373-0461.

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few heads to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of storm water runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (IDEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25% of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RCRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by IDEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory

References Cited

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Idaho Department of Environmental Quality, 1999. Source Water Assessment Plan.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

The final scores for the **Triangle T Ranch Cookhouse** susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

1. System Construction		SCORE			
Drill Date	3/25/96				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2003			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	NO	1			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		2			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	3	2	2	3
(Score = # Sources X 2) 8 Points Maximum		6	4	4	6
Sources of Class II or III leacheable contaminants or	YES	3	2	1	0
4 Points Maximum					
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		9	6	5	6
Cumulative Potential Contaminant / Land Use Score		2	2	1	2
4. Final Susceptibility Source Score		10	10	9	10
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate